

Appl. No. 09/810,387

REMARKS

Claims 1-29 and 37-43 are pending in the application with claim 41 amended herein.

Claims 1, 2, 4-23, 25-29, 41-43 stands rejected under 35 U.S.C. 102(b) as being anticipated by Fukui. Applicant requests reconsideration.

Claim 1 sets forth a CVD apparatus that includes, among other features, a deposition chamber defined by a chamber lid and a chamber body having similar thicknesses and a valve body having an entirety of a seat within the chamber lid or body thickness. Page 3 of the Office Action alleges that the top tapered portion of fence 14 discloses the chamber lid of claim 1 and that the remaining portions of the "solution-escaping inhibitor or fence 14" disclose the chamber body. Page 3 also alleges that wave sprayer 1 has an entirety of a seat (inside surface of needle valve holder 7) within the top tapered portion of fence 14.

However, Applicant notes that claim 1 expressly states that the entirety of the seat is within the thickness of the chamber lid or body where such thickness is defined in claim 1 as being between the innermost and outermost surfaces of the chamber lid or body. Accordingly, Fukui is required to disclose an entirety of the inside surface of needle valve holder 7 being within a thickness of the top tapered portion of fence 14 as defined by the innermost and outermost surfaces of the top tapered portion of fence 14.

Apparently, the Office has failed to appreciate the significance of Applicant's previous amendment of claim 1 to include the term "chamber lid or body thickness." The Office seems to be interpreting claim 1 as though such term were not present. The Office relies primarily upon the same allegations as the previous action prior to such

Appl. No. 09/810,387

amendment even though such allegations are no longer applicable in light of the amendment. The Office Action does not anywhere mention the added term or otherwise appear to give its addition any consideration. Applicant notes that each and every limitation of claim 1 must be considered.

In addition, no teachings whatever exist within Fukui regarding the thickness of fence 14. Column 4, lines 6-8 of Fukui merely state that fence 14 is "for effectively guiding the sprayed solution to the substrate." No other portion of Fukui offering some indication of the thickness of fence 14 can be identified. Accordingly, Applicant asserts that no disclosure exists within the text of Fukui that an entirety of the inside surface of needle valve holder 7 that acts as a valve seat is within the thickness of the top tapered portion of fence 14.

Page 3 of the Office Action apparently relies upon Fig. 1 of Fukui as disclosing the claimed structural features. However, it is clear from the line widths drawn for fence 14 in Fig. 1 that it does not disclose an entirety of the inside surface of needle valve holder 7 that acts as a valve seat being within the thickness of fence 14. In addition, MPEP 2125 entitled "Drawings as Prior Art" clearly states that when a reference does not disclose the drawings as being to scale and is silent as to dimensions, such reference cannot be relied upon to define precise proportions of the elements shown. Such a deficiency is particularly true if the specification is completely silent on the issue.

It is clear that MPEP 2125 precludes the Office from using Fig. 1 as evidence of actual proportions of the features described therein. A person of ordinary skill viewing Fig. 1 in light of the accompanying specification would not find any teaching of an entirety of the inside surface of needle valve holder 7 that acts as a valve seat being

Appl. No. 09/810,387

within a thickness of fence 14. Fig. 1 clearly does not expressly teach such a feature. Further, the Office is precluded from relying upon Fig. 1 as providing any evidence of such a feature since the Fukui specification is silent on the issue. At least for the indicated reasons, Fukui fails to disclose each and every limitation set forth in claim 1 and does not anticipate claim 1.

Claims 2 and 4-8 depend from claim 1 and are not anticipated at least for such reason as well as for the additional limitations of such claims not disclosed. For example, claim 4 sets forth that the valve body includes a portion of the chamber lid or body as at least a part of the seat. Page 3 of the Office Action alleges that Fukui discloses the limitations set forth in claim 4 and refers to column 4, lines 28-31, 36-39, and 53-60. However, review of the referenced text merely reveals a discussion of the individual components of wave sprayer 1 and their operation. Nowhere within the referenced text or elsewhere throughout Fukui does such reference disclose that wave sprayer 1 includes a portion of the top tapered portion of fence 14 or some other part of "solution-escaping inhibitor or fence 14" as at least a part of the inside surface of needle valve holder 7 that acts as a valve seat. Applicant cannot identify any support within Fukui for the Office's allegation that wave sprayer 1 includes a portion of fence 14 as at least a part of a valve seat for wave sprayer 1. If the Office persists in this allegation, Applicant requests an explanation of the pertinence of column 4, lines 28-31, 36-39, and 53-60 in the next Office Action pursuant to 37 CFR 1.104(c).

Claim 9 sets forth a CVD apparatus that includes, among other features, a deposition chamber having a lid and a body with similar thicknesses, a process chemical opening completely through the lid, and an isolation mechanism proximate the

Appl. No. 09/810,387

chemical opening. The isolation mechanism selectively isolates the deposition chamber from receiving material through the chemical opening. Also, the lid is integral to the isolation mechanism. Page 7 of the Office Action alleges that Fukui teaches a lid integral to an isolation mechanism in the same manner as displayed in Figs. 2 and 3 of the present specification.

Applicant acknowledges that Figs. 2 and 3 of the present specification show that certain features of lid 8 or lid 48 form a part of or are necessary for completeness of valve 2 or valve 42. That is, if lid 8 or 48 were removed from the structures shown in respective Figs. 2 and 3, the remaining structural features would not form a complete valve. For example, in Fig. 2 sidewalls 12 form a part of housing 10 even though sidewalls 12 are part of lid 8, as described on page 12, lines 6-9 of the present specification. Also, seat 14 of valve 2 is similarly comprised by lid 8. If lid 8 is removed from the structural features shown in Fig. 2, then valve 2 would lack a portion of housing 10 and seat 14. Thus, lid 8 is shown to be integral to valve 2. Similar comparisons can be made with Fig. 3 as discussed on page 13, line 20 to page 14, line 3 of the present specification.

In contrast, the Office Action alleges that top tapered portion of fence 14 discloses the claimed lid, but the top tapered portion of lid 14 is not shown in Fukui as in any way being integral to wave sprayer 1 or needle valve holder 7. If the entirety of fence 14, including the top tapered portion, were removed from the structural features in Fig. 1, then wave sprayer 1 acting as an isolation mechanism would remain a fully functional isolation mechanism. No reasonable argument can be made that fence 14 is

Appl. No. 09/810,387

necessary for completeness of wave sprayer 1 acting as an isolation mechanism. At least for such reason, Fukui does not disclose every limitation set forth in claim 9.

Claims 10-14 depend from claim 9 and are not anticipated at least for such reason as well as for the additional limitations of such claims not disclosed. For example, claims 12, 13, and 14 respectively set forth that the lid includes at least a part of a seat of a valve, at least a part of a housing of a valve, and at least a part of a process chemical inlet to the valve. As is readily apparent from Fig. 1 of Fukui, fence 14 does not include any part of the portion of needle valve holder 7 that acts as a valve seat. Also, fence 14 does not include any part of needle valve holder 7 functioning as a valve housing. Further, fence 14 does not include any part of flow path 11 functioning as a process chemical inlet. If fence 14 were removed from the structural features shown in Fig. 1, then each of the indicated seat, housing, and process chemical inlet would remain fully functional.

Claim 15 sets forth a CVD apparatus that includes, among other features, a deposition chamber having a lid and a body with similar thicknesses and a valve body including a portion of the lid as a part of the valve body. The valve body selectively shuts off flow of a process chemical into the chamber, adjusts the flow rate of the chemical into the chamber, or both. As may be appreciated from the discussion above regarding the deficiencies of Fukui as applied to previously discussed claims, Fukui fails to disclose a valve body including a portion of the deposition chamber lid as a part of the valve body.

Page 3 of the Office Action alleges that wave sprayer 1 discloses a valve body and includes a portion of fence 14 as part of the valve housing. Elsewhere in the Office

Appl. No. 09/810,387

Action, the Office additionally alleges that fence 14 forms other portions of a valve body. However, Applicant asserts that every feature of a valve body described in Fukui as being included in wave sprayer 1 will remain if fence 14 is completely removed. That is, the Office alleges that wave sprayer 1 includes a portion of the chamber lid as a part of wave sprayer 1 but if fence 14 (allegedly disclosing the claimed lid) were removed, then such removal does not remove any part of wave sprayer 1 functioning as a valve body. It is not seen how wave sprayer 1 can be considered to include a portion of fence 14 as a part of wave sprayer 1 when wave sprayer 1 acting as a valve body remains a fully functioning valve body even when fence 14 is not present.

Fukui does not anywhere disclose that fence 14 functions as some component of a valve body. Rather, as asserted above, the exclusive purpose of fence 14 is as a solution-escaping inhibitor to effectively guide a sprayed solution to a substrate. The Office Action does not anywhere provide evidence that Fukui supports fence 14 functioning in some other capacity. Further, inspection of Fig. 1 makes it clearly apparent that fence 14 does not possess any structural features that might allow it to somehow function as part of a valve body. Wave sprayer 1 functions entirely independent of the existence or non-existence of fence 14. Fence 14 does not bear even the slightest relevance to wave sprayer 1 functioning as a valve body. Applicant refers the Office to the present specification for repeated description of what types of valve components may be considered to form a "valve body."

Accordingly, Applicant asserts that Fukui does not disclose a valve body including a portion of a chamber lid as a part of the valve body. At least for such reasons, Fukui fails to disclose each and every limitation of claim 15. Claims 16-26

Appl. No. 09/810,387

depend from claim 15 and not anticipated at least for such reason as well as for the additional limitations of such claims not disclosed.

Claim 27 sets forth a CVD apparatus that includes, among other features, a deposition chamber having a lid and a body with similar thicknesses, a valve body having a housing and a seat, at least a part of the housing including at least a part of the outer surface of the lid, at least a part of opening sidewalls of the lid, or both, and at least a part of the seat including at least a part of the inner surface of the lid, at least a part of the opening sidewalls of the lid, or both. As may be appreciated from the discussion above regarding the deficiencies of Fukui as applied to the various claims, Fukui fails to disclose each and every limitation of claim 27.

Page 4 of the Office Action alleges that valve seat (6/7 interface) is comprised by a portion of the lid. However, such allegation is inconsistent with the page 3 allegation that top tapered portion of fence 14 discloses the lid. It is clearly apparent that the top tapered portion of fence 14 does not in any way comprise a valve seat (6/7 interface). Applicant notes that claim 27 sets forth that the lid and body have similar thicknesses. Since the Office Action considers fence 14 to also disclose the deposition chamber body, the Office is precluded from asserting that wave sprayer 1 somehow forms a similar thickness lid, as set forth in claim 27. Previous discussion herein clearly establishes that Fukui does not disclose wave sprayer 1 having a similar thickness to fence 14. As such, wave sprayer 1 cannot be considered to disclose the lid set forth in claim 27 while fence 14 is alleged to disclose the deposition chamber body.

It is also established herein, pursuant to previous discussion, that Fukui does not disclose at least a part of a valve housing including at least a part of fence 14, opening

Appl. No. 09/810,387

sidewalls through fence 14, or both. Similarly, Fukui does not disclose at least a part of a valve seat including at least a part of fence 14, at least a part of opening sidewalls of fence 14, or both. At least for such reason, Fukui fails to disclose each and every limitation of claim 27. Claims 28 and 29 depend from claim 27 and are not anticipated at least for such reason as well as for the additional limitations of such claims not disclosed.

Amended claim 41 sets forth a CVD apparatus that includes, among other features, a deposition chamber having a lid, a valve body including a portion of the lid as part of the valve body, and a valve stem. The valve body is adapted to receive external control signals selectively shutting off flow of a process chemical into the chamber, adjusting the flow rate of the chemical into the chamber, or both. The amendment to claim 41 is supported by page 10, lines 2-8, page 13, lines 2-5, page 14, lines 8-11, and elsewhere throughout the present specification. Applicant asserts that Fukui does not disclose or suggest wave sprayer 1 receiving external control signals selectively shutting off flow or adjusting flow rate, as set forth in claim 41. At least for such reason, Fukui does not anticipate claim 41. Claims 42 and 43 depend from claim 41 and are not anticipated at least for such reason as well as for the additional limitations of such claims not disclosed.

As asserted above, claims 1, 2, 4-23, 25-29, and 41-43 are not anticipated by Fukui. Applicant requests allowance of such claims in the next Office Action.

Claims 3, 24, and 37-40 depend from independent claims the subject matter of which are discussed above. The Office's allegations of unpatentability fail to remedy the deficiencies of Fukui discussed above. At least for such reason, claims 3, 24, and

Appl. No. 09/810,387

37-40 are patentable over the cited references.

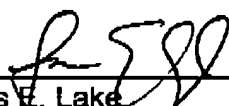
Applicant notes that an initialed copy of Form PTO-1449 has not yet been received for an IDS previously filed on March 15, 2001 with the initial filing papers. Applicant herewith submits a copy of the IDS for the Office's convenience and requests consideration of the references cited therein and return of the initialed form.

Applicant herein establishes adequate reasons supporting allowability of claims 1-29 and 37-43 and requests allowance of all such pending claims in the next Office Action.

Respectfully submitted,

Dated: 12 Mar 2004

By: _____


James E. Lake
Reg. No. 44,854

Inventor: Craig M. Carpenter; Ross S. Dando; Philip H. Campbell;
Allen P. Mardian; Jeff N. Fuss; Randy W. Mercil

Title: Chemical Vapor Deposition Apparatuses and Deposition
Methods

Assignee: Micron Technology, Inc.

Attorney Docket No. MI22-1559

COPY

COPY

INFORMATION DISCLOSURE STATEMENT

References -- See Attached Form PTO-1449

REMARKS


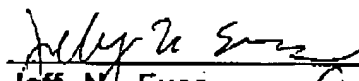
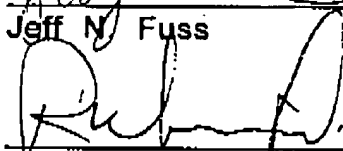
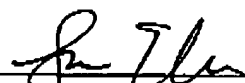
The citations listed, copies attached, may be material to the examination of the subject application and are therefore submitted in compliance with the duty of disclosure defined in 37 CFR §1.56. The Examiner is requested to make these citations of official record in this application. No admission is made regarding whether all the submitted references are prior art.

The materials cited are presented to assist in and expedite examination of this application. The present invention is considered to be patentable over the cited materials. Expeditious examination and allowance of this application as a patent are therefore urged in order that the public may benefit from the disclosure and commercialization of the invention.

EL 465855526

COPY

Respectfully submitted,

Dated: 8 March 2001Inventor: 
Craig M. CarpenterDated: 3/8/01Inventor: 
Ross S. DandoDated: March 8, 01Inventor: 
Philip H. CampbellDated: 3-8-01Inventor: 
Allen P. MardianDated: 3-8-01Inventor: 
Jeff N. FussDated: 03/08/01Inventor: 
Randy W. MercilDated: 15 Mar 2001Attorney: 
James E. Lake
Reg. No.: 44,854

Form PTO-1449		U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE			ATTY. DOL. NO. M122-1559		SERIAL NO. Filed Herewith	
LIST OF ART CITED BY APPLICANT (Use several sheets if necessary)					APPLICANT Craig M. Carpenter et al			
					FILING DATE Filed Herewith		GROUP Unknown	
U.S. PATENT DOCUMENTS								
*Examiner Initial		Document Number	Date	Name	Class	Subclass	Filing Date If Appropriate	
	AA	5,885,358	3/23/99	Maydan et al				
	AB							
	AC							
	AD							
	AE							
	AF							
	AG							
	AH							
	AI							
	AJ							
	AK							
	AL							
FOREIGN PATENT DOCUMENTS								
		Document Number	Date	Country	Class	Subclass	Translation	
							Yes	No
	AM							
	AN							
	AO							
	AP							
	AQ							
OTHER REFERENCES (including Author, Title, Date, Pertinent Pages, Etc.)								
	AR							
	AS							
	AT							
EXAMINER				DATE CONSIDERED				
<small>*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.</small>								

EL465855526

M1221559\ID2.wpd

A27103061308N